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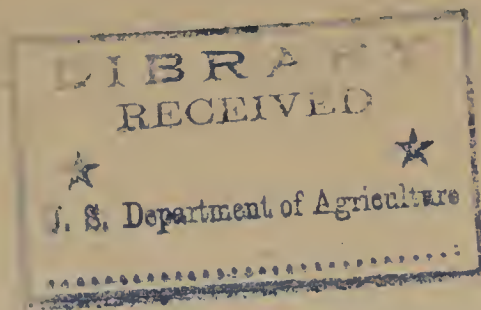
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UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY.

Farmers' Cooperative Demonstration Work,
Washington, D. C.

MARCH 23, 1915.

CANNING.

TO CANNING CLUB MEMBERS IN THE SOUTH:

It is important that you get ready for the canning season by securing in advance supplies such as jars, cans with solder hemmed caps, canning outfit, etc., so that you will allow nothing to go to waste. It is also of the greatest importance that you study your instructions and follow the advice of your county agent carefully that your products may be of fine quality. Club members must follow these instructions for canning so that all products may be uniform and of standard pack. Tack these rules up by you as you work and observe every one of them. Remember that the "4H- Brand" label can be used only on the best and that every can you pack must come up to these standards if sold. By so doing you can secure a good market and sustain your reputation for fine products.

The United States Food and Drugs Act requires that foods in package form which are shipped from one State to another should have the quantity of the contents plainly and conspicuously marked. This applies to canned fruits and vegetables, in which case the net weight should be stated in pounds and ounces. Many States have similar requirements. It is illegal to sell a package containing less than the net weight stated on the label.

The directions in this circular enable you not only to comply with Federal regulations but also to produce the quality required for standard club products.

PREPARATION FOR CANNING IN TIN.

Making flux.—Put some commercial hydrochloric (muriatic) acid in a glass or crockery vessel (not metal), add strips of sheet zinc until no more can be dissolved. To this add an equal quantity of water. Label this "Flux" and use carefully. When canning have one vessel (a can will do) with enough flux in it to clean the tools. Keep separately, in a glass bottle, the quantity to be used in sealing cans.

Cleaning and tinning the steel and copper.—It is of first importance to have capping steel and tipping copper in good condition. These may need to be rubbed with coarse sandpaper or on a soft brick to smooth them, or may have to be filed to take the rust off. In the latter case care must be taken to keep the edge of the steel true. Both the capping steel and tipping copper must be kept tinned or coated with solder to make the solder flow evenly when sealing. Have ready in a can a handful of sal ammoniac mixed with a few pieces of solder. Heat the already smoothed capping steel or tipping copper until almost red hot, dip into the flux, then into the sal ammoniac and solder, turning it about and rubbing until bright and well coated with solder. Then dip into the flux again.

Preparation of vegetables.—In securing a fine quality, much depends upon having the vegetables or fruit absolutely fresh, crisp, and clean, and kept cool. Have all surroundings and utensils spotlessly clean, and carry on all steps from beginning to end of any lot of canning as rapidly as possible. A good slogan is "one hour from the field to the can." First have cans

and lids thoroughly washed and scalded. Sort and grade fruit, discarding all defective ones, and use together those of same size. Use only uniformly well ripened products. In canning, the flavor is retained only when young, tender, quickly grown vegetables are used.

STEPS TAKEN IN CANNING IN TIN.

1. *Sorting* and grading fruit or vegetables, washing, peeling, etc.
2. *Scalding, peeling, and coring (for tomatoes).*—Put into trays and lower into boiling water for one minute. Remove at once to prevent cooking. Plunge into cold water to make the fruit firm, and peel promptly. In tomato peeling use a slender pointed knife to cut out the core and be careful not to cut into the seed cells. Keep the tomatoes whole when possible.
3. *Blanching* consists of plunging the vegetable or fruit into boiling water for a short time. Use a wire basket or cheese cloth square for this. The blanch gives a more thorough cleaning, removes the strong odor and flavor from certain kinds of vegetables, improves the texture and gives a clearer liquor. It also shrinks the fruit or vegetable and makes it more flexible. A full pack is then more easily made. The time required for blanching varies with the state of maturity. Beans should be blanched until tender enough to bend without breaking. Peaches will pack better if blanched for an instant in water below boiling (about 180° F.) lowering peaches into it for 15 seconds. The same blanch will make the hard varieties of pears pack better and give them a more transparent appearance; and used for cherries will prevent splitting and cracking. Spraying fruit with cold water after blanching will make it firmer. Frequently it is well to put the vegetable into cold water for an instant after blanching to make more crisp. In blanching asparagus, tie a few stalks in each bundle, lower bundle into water, tips up, blanching the lower ends one or two minutes before immersing the tips. Blanch the tips only two or three minutes.
4. *Packing* (see table for size of cans to use for different vegetables).—The Federal laws require the cans to be filled as full of food as is practicable for processing and to contain only enough liquor to fill the spaces and cover the contents. Weigh a sufficient number of cans before and after filling to obtain an accurate idea of average net weight. On account of expansion in processing, corn can be packed less full than other vegetables. These instructions do not cover the canning of corn for market. Mark cans with pencil or knife to show contents. Plan in advance and work rapidly. Let one person do packing and another attend to the weighing. Do not allow filled cans to stand before adding liquor and exhausting. To do so will injure the product.
5. *Adding brine, sirup, or water.*—After adding to within $\frac{1}{4}$ inch of top, shake can gently to displace all air within the can. Now clean and wipe the groove around the opening. Slip on cap and weigh before sealing to be sure of having required weight.
6. *Fluxing and capping.*—Apply the flux carefully around the groove, allowing none of it to enter the can. Use a small brush, cord, or little mop made by tying a piece of clean white cloth around the end of a small stick. The flux is used to make the solder adhere to the tin. Apply the clean, hot capping steel, holding the cap in place with the center rod; while you lower the steel, turn it steadily until the solder flows. Hold the rod firmly and lift the steel with a sudden twist to swing the melted solder around the groove evenly.
7. *Exhausting.*—Place the cans in trays and lower into boiling water to within 1 inch of the top to drive the air out of the cans. Let them stay the shortest time possible to drive out the air. Ordinarily three minutes is enough, and the temperature need not again reach boiling before cans are taken out. Frequently, exhausting is done at 180° F. Exhausting is necessary. If omitted, the air left in the can expands, causing it to bulge. The can may not resume normal shape again, or if it does and is exposed to a warmer temperature, it may again expand, giving the appearance of a "swell." This will prevent sale not only of that can but may also cut off

future orders. Furthermore, the presence of air may cause the tin to dissolve more readily and enter into the food. Exhausting is required where the 4-H Brand label is used.

8. *Tipping*.—Close the small hole in top of can immediately after exhausting. Apply flux as for capping, and use a little wire solder. Hold the solder with left hand near the hole and barely touch the hot copper to it so that only a bead will drop and cover the hole. This makes a neat tip.

9. *Processing*.—Boil the cans which have been exhausted and tipped to sterilize the contents. Have the water boiling vigorously when the cans go in. Lower cans slowly under the water and look out for any showers of bubbles from a can. This shows that it leaks at the point from which the bubbles come and must be taken out and resoldered. Begin counting time when the water first boils after immersing the cans. Keep it boiling constantly. In intermittent processing the vegetable is processed for one hour on each of three successive days. The time is sometimes reduced to two days with very young string beans and some other more easily sterilized vegetables. It is not possible to give you the shortest time which may be used safely because of the varying conditions.

10. *Cooling*.—Cool all canned products as quickly as possible to stop the cooking, which breaks down the fruit and injures the flavor and color. Plunge cans into very cold water immediately, especially when processing intermittently. Never stack cans close together until entirely cold.

11. *Labeling*.—After 8 to 10 days, or immediately before selling, label all cans. Place the sealed end down so that the opposite end will appear at the top when placed on the shelf. Use a rather dry paste, and put it only on the label at the end so that no paste will touch the tin. If paste touches the can it may cause rust. Where a damp climate causes cans to rust easily, the outside of can may be lacquered before being labeled. Club members may use the "4-H Brand" label only on first-class goods. They must put net weight in pounds and ounces and packer's name and address on each can. Every girl thus guarantees her own goods.

Brining and seasoning.—Brine, sirup, or water are added immediately after packing to such fruits and vegetables as need to be surrounded by a liquid either for proper preparation or for purpose of sterilization. No more liquor is allowed than is actually necessary to cover the contents after as full a pack as possible is made. All 4-H Brand tomatoes have a mixture of sugar and salt added. Mix this in the proportion of one-third salt and two-thirds sugar and put two level teaspoonfuls in each No. 3 can of tomatoes and one teaspoonful in each No. 2 can. Use this for peas, lima beans, and corn. It is required that all products to be sold be packed with the sirup or brine indicated so as to come up to the standard. The flavor of such products is much superior to those without sugar or salt. In canning tomatoes, no addition of tomato juice in excess of the amount present in the tomatoes canned is allowed. Any water is considered an adulteration. In canning tomatoes in glass for exhibits and home use, when it is desirable to keep the tomatoes whole, they may be packed carefully and a thick liquor poured over them. This may be obtained by cooking smaller or broken tomatoes and putting through a sieve.

Brine for beans, okra, cauliflower, etc., should contain $2\frac{1}{2}$ ounces salt to a gallon of water. For asparagus, a heavier brine, 4 ounces to a gallon of water, is needed.

STANDARDS FOR 4-H BRAND CANNED VEGETABLES.

Tomatoes.—Cans to contain not less than 2 pounds 1 ounce tomatoes in No. 3 and not less than 1 pound 4 ounces tomatoes in No. 2. To be filled with sound ripe fruit, carefully peeled and cored; tomatoes to be whole or in large pieces, firm, uniformly red, and of good flavor.

Tomatoes and green pepper.—Cans to contain not less than 2 pounds packed in No. 3 cans. For this pack add one medium-sized green sweet pepper, after removing the stem and seeds, to each can of tomatoes.

String beans.—Net weight in No. 3 can before liquor is added at least 1 pound 8 ounces, brine 8 to 10 ounces. Net weight No. 2, 13 ounces beans and about 8 ounces liquor. Beans to be tender, green, uniform in size, well strung, and of good flavor. The net weight which appears on label should be for No. 3, 2 pounds, for No. 2, 1 pound 5 ounces.

Peas.—No. 2 cans to have at least $13\frac{1}{2}$ ounces net weight of peas, and about $8\frac{1}{2}$ ounces liquor—peas to be fairly uniform in size, tender, whole and of good flavor; liquor clear. Net weight appearing on label should be for No. 2 cans 1 pound 8 ounces.

Baby beets.—To be packed in No. 2 lacquered tins, about 30 baby beets to each can, maximum size $1\frac{1}{2}$ inches in diameter and average size 1 inch in diameter. No. 2 can to have at least 16 ounces whole beets and 4 ounces liquid. Net weight which appears on label should be for No. 2 can 1 pound 4 ounces.

Okra.—Net weight of contents in No. 3 can should appear on label 2 pounds. Only young, tender okra should be packed, and it is best to simply remove cap without cutting into seed pod and pack it whole. Brine is added as explained in the table.

Peppers.—No. 2 cans to contain between 8 and 10 whole peppers. Flat No. 1 cans to contain 4 or 5 whole peppers, and net weight of contents appearing on the label should be for No. 2 can not less than 1 pound, or flat No. 1 can not less than 8 ounces.

Soup mixture.—Should consist of a mixture which is made in the proportion of one-half tomato pulp, one-fourth corn or tiny lima beans, and one-fourth okra with seasoning added. One slice onion 2 inches in diameter should be added to each No. 2 can. The tomatoes should be heated, rubbed through a sieve and cooked down to about the consistency of ketchup before measuring; then the corn, okra, onion and seasoning should be added and cooked until corn and okra are about three-fourths done. Then pack into cans and follow directions as given in table. Net weight of contents appearing on label of No. 2 can should be 1 pound $4\frac{1}{2}$ ounces.

PREPARATION FOR CANNING IN GLASS.

Jars.—The glass top jar with wire clamp is the best type of jar for use in intermittent processing. If products are to be sold, a good commercial jar is necessary. Commercial jars when purchased in gross quantities are cheaper than household jars and can be chosen in appropriate size for each product. A 10 or 12 ounce jar with glass top and screw rim can be effectively used for preserves, jams, pickles, etc. Another good type of commercial jar is one with hermetic cap and can be had in different sizes for various products. A 4-ounce size is suitable for individual service, a 10-ounce size for general use.

Assemble all supplies and utensils such as jars, new rubbers and lids, wooden spoons, paddle, one-half pint measuring cup, measuring spoons, paring knives, sugar, salt, soda, etc., in a clean convenient place in which to work.

STEPS TO BE TAKEN IN CANNING IN GLASS.

The steps 1, 2, and 3, under "Canning in Tin" are also to be followed when packing in glass. Sterilize jars by placing them in a vessel, side down, covering with cold water, bringing to a boil and boiling for 15 minutes.

4. *Packing.*—After selecting fruit or vegetables for uniformity in size and quality (see score) it should be arranged with reference to symmetry and the best use of the space within the jar. In placing the fruit or vegetable in a jar, a thin, slender, flexible paddle made out of cane is useful. This paddle is also used to take out the bubbles of air by running it down the side of the jar to touch these bubbles after the liquor has been added to the pack.

5. *Adjusting the cap.*—Before placing the cap be sure that the rubber is flattened in its groove, without the presence of any seed or particle of the fruit. When a screw-top jar is used, screw the cap evenly about half way. When a glass-top jar with wire clamp is used, place lid

on evenly and raise both clamps up, the upper one fastened to hold the lid in place. With an hermetic jar, fasten the cap on the jar evenly with the clamp. The last jar is self-sealing as it cools.

6. *Processing*.—Place the jars in a water bath on a rack (wooden one good) to avoid breaking. Have water the same temperature as the contents, letting it come to within 2 inches of the tops of jars. Have a tight cover for the vessel to keep in the steam. Do not count time until the water begins to boil; keep it boiling steadily for the time required. Seal the jars air-tight promptly at end of processing and remove them from the bath, being careful not to allow a cold draft to strike them. In intermittent processing, raise the clamp of each jar at the beginning of each processing to allow for expansion. Seal at close of each processing. The hermetic jar is not a suitable one for intermittent processing.

7. Store products in a cool, dry, dark place.

8. *Labeling*.—Before labeling, wash and polish each jar. Place the label on the plain side of the jar midway between the seams one-fourth inch from the lower edge. On every label must appear the name of the contents, name and address of the packer, and net weight in pounds and ounces.

Score for judging the quality of canned fruits and vegetables.

	Score of 100.	Score of 30.
I. Appearance.....	25	7½
(a) Color.		
(b) Clearness.		
II. Texture.....	10	3
III. Flavor.....	20	6
IV. Uniformity.....	15	4½
(a) Ripeness.		
(b) Appropriate size.		
V. Pack (arrangement).....	15	4½
VI. Container.....	15	4½
(a) Appropriate package.		
(b) Label.		
(c) Neatness.		

STANDARDS FOR 4-H BRAND CANNED FRUITS.

Figs.—Net weight contents No. 2 enamel-lined can of figs should appear on label not less than 1 pound 6 ounces. Figs should remain whole and a No. 2 can contain about 30 to 35 whole figs.

Peaches.—No. 3 can to have at least 1 pound 5 ounces solids and 11 ounces liquid; to contain between 10 and 12 halves of peaches and have net weight of contents appearing on label not less than 2 pounds.

Pears.—Net weight in No. 3 can should be not less than 2 pounds, having 11 ounces liquid, 1 pound 5 ounces solids, and between 12 and 14 halves.

Berries.—No. 3 can blackberries or raspberries, net weight 2 pounds; No. 2 cans, net weight 1 pound 6 ounces, whole berries weighing about one-half of total in each case. Berries to be large, whole, of good color and flavor. The sirup used in packing must be made out of strained berry juice and sugar, no water added. Always pack in enamel-lined cans.

MARY E. CRESWELL,

OLA POWELL,

Assistants in Home Demonstration Work.

Approved:

BRADFORD KNAPP,

In Charge of Cooperative Demonstration Work in the South.

CANNING VEGETABLES (HOT-WATER PROCESS).

Do not attempt to use this table without reading all directions carefully.

Vegetable.	Blanch, minutes.	Liquor.	In tin.			In glass.	
			No. of can.	Exhaust, minutes.	Process.	Jar.	Process.
Asparagus.....	3 to 4.....	Brine (heavy)....	2	3	Intermittent or 2 hours	Pint....	Intermittent or 2 hours continuous.
String beans.....	3 to 8.....	Brine.....	2	3	Intermittent.....	do....	Do.
Do.....	.....	do.....	3	5	do.....	Quart....	Intermittent.
Lima beans.....	2 to 5.....	Salt, sugar, water..	2	3	do.....	do....	Do.
Beets.....	Cook $\frac{3}{4}$ done, peel..	Brine.....	2	3	1 to 2 hours.....	do....	1½ to 2 hours.
Carrots.....	Cook $\frac{3}{4}$ done, scrape..	do.....	2	3	1 hour.....	do....	1 hour.
Corn.....	1 to 3 (blanch on cob).	Salt, sugar, water..	2	10	Intermittent.....	do....	Intermittent.
Okra.....	15 to 10.....	Brine.....	2	3	do.....	Pint and quart.	Do.
Peas (very young)..	1 to 3.....	Salt, sugar, water..	2	3	45 minutes first day, 35 minutes second and third days.	Pint....	Same as No. 2.
Peas, medium.....	3 to 8.....	do.....	2	3	Intermittent.....	do....	Intermittent.
Potato, sweet.....	Cook $\frac{3}{4}$ done, peel..	Pack dry.....	3	15	3 hours.....	Quart....	3 hours.
Rhubarb.....	.....	Cold water.....	2	2	15 minutes.....	do....	15 minutes.
Soup mixture.....	.....	Salt, sugar.....	2	5	2 hours or intermittent	do....	2 hours or intermittent.
Tomato.....	.....	do.....	2	2	20 minutes.....	Pint....	15 minutes.
Do.....	.....	do.....	3	3	30 minutes.....	Quart....	30 minutes.

NOTE.—String beans packed in No. 2 cans are preferable because more surely sterilized.

Corn, Lima beans, and peas should never be packed in larger container than No. 2 and processed always intermittently. Corn is cut from cob after blanching.

Soup mixture containing corn and Lima beans should always be processed intermittently.

The brine used is made of 2½ ounces salt to 1 gallon water, except for asparagus, which contains 4 ounces to 1 gallon.

Beets and rhubarb when packed in tin must be put in enamel-lined cans.

CANNING FRUITS (HOT-WATER PROCESS).

Fruit.	Blanch.	Sirup.	In tin.			In glass.	
			No. of can.	Exhaust, minutes.	Process, minutes.	Jar.	Process, minutes.
Apples.....	1 minute.....	No. 1.....	3	2	8	Quart....	12
Berries.....	.....	No. 3.....	2	2	10	do....	10
Cherries, sweet.....	15 seconds.....	do.....	2	2	20	do....	25
Cherries, sour.....	do.....	No. 4.....	2	2	20	do....	25
Currants.....	.....	No. 3.....	2	2	15	do....	15
Figs.....	Soda blanch.....	do.....	2	2	25	do....	30
Gooseberries.....	.....	do.....	2	2	15	do....	20
Guava.....	15 seconds.....	No. 4.....	2	3	20	do....	35
Do.....	do.....	.....	3	3	25	Pint....	25
May haw.....	.....	No. 3.....	2	2	20	Quart....	25
Peaches.....	15 seconds.....	No. 4.....	3	3	15	do....	20
Pears.....	do.....	No. 3.....	3	3	20	do....	25
Plums.....	Prick with needle.....	No. 4.....	2	2	12	do....	15

NOTE.—Berries, cherries, currants, figs, gooseberries, May haws, and plums when packed in tin must be put in enamel-lined cans.

To make the sirups recommended, boil sugar and water together in the proportion given below until sugar is dissolved. Strain all impurities out of the sirup before using:

Sirup No. 1, use 14 ounces to 1 gallon water.

Sirup No. 2, use 1 pound 14 ounces to 1 gallon water.

Sirup No. 3, use 3 pounds 9 ounces to 1 gallon water.

Sirup No. 4, use 5 pounds 8 ounces to 1 gallon water.

Sirup No. 5, use 6 pounds 13 ounces to 1 gallon water.

S.D.A. Plant Indust.
Planning.

Mar. 23, 1915

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